



New information on the Caribbean *Rissoina* (Gastropoda, Rissoidae) of the group *R. sagraiana-cancellata* with the description of a new species

Nueva información sobre las *Rissoina* del Caribe (Gastropoda, Rissoidae) del grupo de *R. sagraiana-cancellata*, con la descripción de una nueva especie

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ABSTRACT

Five species of the genus *Rissoina* from Cuba are characterized and illustrated with scanning electron micrographs: *Rissoina sagraiana*, *R. pulchra*, *R. labrosa*, *R. redferni* and *R. cancellina* spec. nov. *Rissoina cancellata* is here placed in synonymy of *R. sagraiana*.

RESUMEN

Se caracterizan e ilustran con micrografías electrónicas de barrido cinco especies del género *Rissoina* de Cuba: *Rissoina sagraiana*, *R. pulchra*, *R. labrosa*, *R. redferni* y *R. cancellina* spec. nov. Se considera *Rissoina cancellata* como un sinónimo de *R. sagraiana*.

INTRODUCTION

Some of the species of the genus *Rissoina* in the Caribbean are poorly known, sometimes only from bibliographic references or from just a few figures. Even species recently described lack good photographs of details, such as the protoconch or microsculpture; this hinders the perfect knowledge of the species as well as the comparison with other species of the group, sometimes forcing other researchers to face problems about synonymy or validity.

Some species of this group were described for the Caribbean in a previous century: D'ORBIGNY (1842), PHILIPPI (1847), ADAMS (1850), etc.

PONDER (1985) revised the family Rissoidae at the generic and subgeneric levels, including among others the sub-

genus *Phosinella* Mörch, 1876 based on one of the species here studied.

The taxonomy of the species treated herein has been subject to disagreement. DESJARDIN (1949) revised the Cuban species of *Rissoina* and considers *R. pulchra* as a synonym of *R. cancellata*, followed in this by PONDER (1985). Conversely DE JONG AND COOMANS (1988) consider that *R. pulchra* is a synonym of *R. sagraiana*. Other works on the Caribbean malacological fauna have recorded and represented species of this group: WARMKE AND ABBOTT (1961), ABBOTT (1974), DE JONG AND COOMANS (1988), DÍAZ MERLANO AND PUYANA HEGEDUS (1994), RIOS (1994), REDFERN (2001), ESPINOSA AND ORTEA (2002), LEE (2009), among others.

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In the present paper, we present information on some characters of five Caribbean species of *Rissoina* which are morphologically very close, although the protoconchs show enough characters for differentiation. The previous papers on this group by the authors were ROLÁN AND FERNÁNDEZ-GARCÉS (2009a, 2009b).

Abbreviations

BMNH The Natural History Museum,
London
CFG coll. Fernández Garcés, Cienfuegos
CHL collection of Harry G. Lee, Florida

IES Instituto de Ecología y Sistemática,
La Habana
IGH Instituto de Oceanología, La
Habana
MCZ Museum of Comparative Zoology,
Harvard
MHNS Museo de Historia Natural, San-
tiago de Compostela
MNCN Museo Nacional de Ciencias
Naturales, Madrid
MNHN Museum national d'Histoire
naturelle, Paris
ZMB Zoologisch Museum, Berlin
s shell
j juvenile

SYSTEMATICS

Superfamily RISSOIDEA J. E. Gray, 1847

Family RISSOIDEA J. E. Gray, 1847

Subfamily RISSOININAE Stimpson, 1865

Genus *Rissoina* d'Orbigny, 1840

Type species: *Rissoina inca* d'Orbigny, 1840. Original designation.

Rissoina sagraiana d'Orbigny, 1842 (Figs. 1A-F)

Rissoina sagra d'Orbigny, 1842. *Hist. Nat. Cuba*, Atlas pl. 12, figs 4,5.

Rissoina sagraiana d'Orbigny, 1846. *Hist. Nat. Cuba*, vol. 2: 25.

Rissoina cancellata Philippi, 1847. *Zeitsch. Malak.*, 1846: 127.

Type material: *R. sagraiana*: Lectotype, selected in original lot of syntypes by Ángel Luque and hereby designated (Fig. 1A-C) and 3 paralectotypes in BMNH. *R. cancellata*: Holotype in ZMB (coll. Pfeiffer, 2334), 5.8 mm (see Remarks).

Other material examined: Cuba: 12 s, 2 j, Cayo Carenas, Cienfuegos Bay, 5-10 m (CFG); 20 s, 16 j, Rancho Luna, Cienfuegos, 12 m (CFG); 12 s, Faro Luna, Cienfuegos, 40 m (CFG); 8 s, 3 j Mangles Altos, Cienfuegos, 8 m (CFG); 5 s, Rancho Club, Cienfuegos Bay, 2 m (CFG); 10 s, Rancho Luna, Cienfuegos, 10-55 m (MHNS); 10 s, Faro de los Colorados, Cienfuegos, 20 m (MHNS). Nicaragua: 1 s, 1 f, Cayo Witties, 20 m (MHNS).

Description: Shell (Figs. 1A-C, 1E): see the original descriptions (D'ORBIGNY, 1846; PHILIPPI, 1847). Protoconch (Figs. 1D, 1F) with about $2\frac{1}{2}$ - $2\frac{3}{4}$ whorls, sometimes almost 3 whorls, and with a diameter of about 390-400 μm . It is smooth but on the last whorl (or starting a little before) an evident spiral thread can be observed at the middle of the periphery. At the beginning of the teleoconch there are two spiral cords in the middle of the whorl; in the following

whorls, a new spiral cord appears between the two previous ones. The spiral cords are 6-7 on the last whorl, plus some smaller ones near the base.

Holotype of 5.8 mm, other shells from Cuba are slightly larger.

Distribution: This species is well known from many works from all the Caribbean: WARMKE AND ABBOTT (1961) from Puerto Rico; VOKES AND VOKES (1983) from Campeche and Yucatan; DE JONG AND COOMANS (1988) from

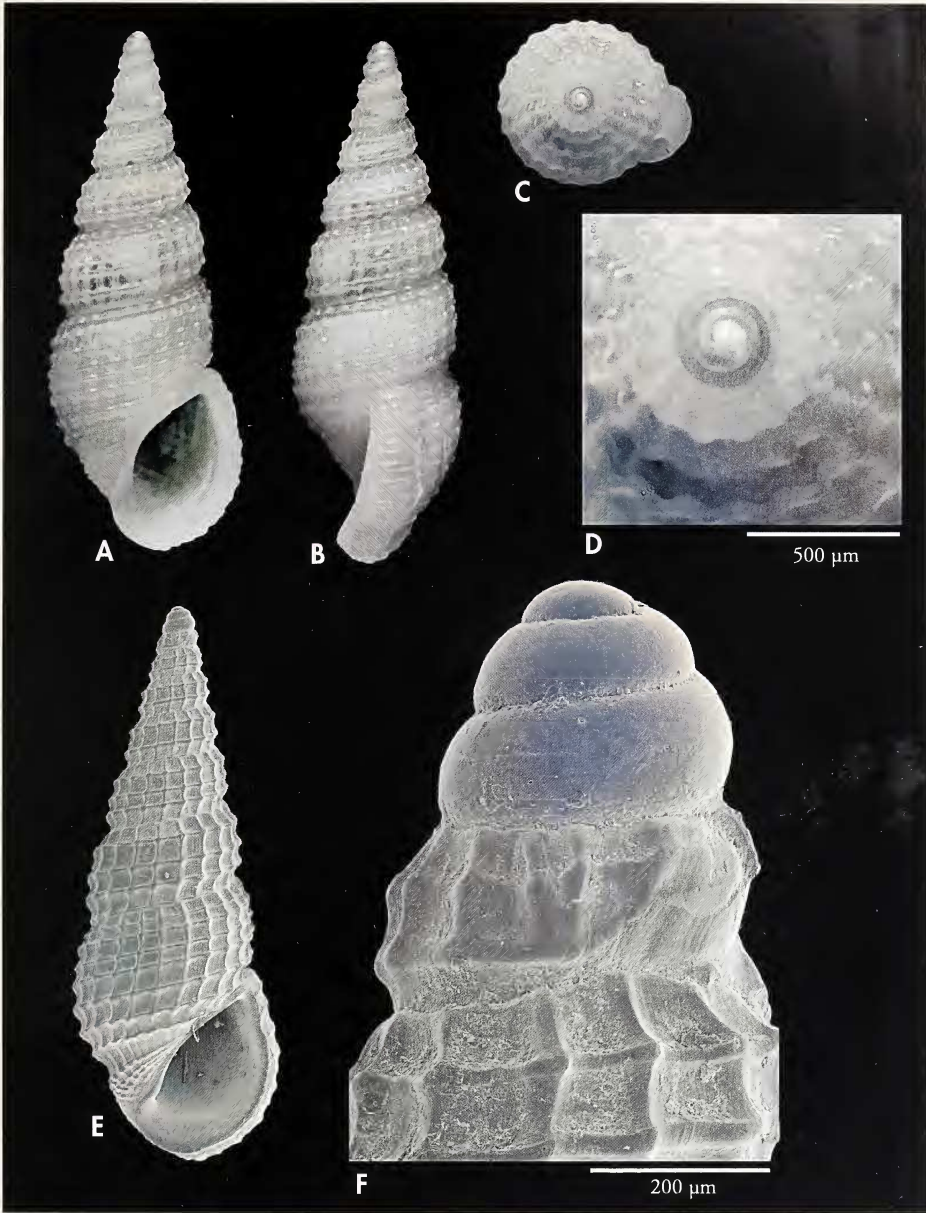


Figure 1. *Rissoina sagraiana* d'Orbigny, 1842. A-C: lectotype, 5.5 mm (BMNH); D: protoconch of the lectotype; E: shell from Cienfuegos, Cuba, 5.7 mm; F: Protoconch, same shell as E.

Figura 1. *Rissoina sagraiana* d'Orbigny, 1842. A-C: lectotipo, 5,5 mm (BMNH); D: protoconcha del lectotipo; E: concha de Cienfuegos, Cuba, 5,7 mm; F: Protoconcha, misma concha que E.

Curaçao, Aruba and Bonaire; DÍAZ MERLANO AND PUYANA HEGEDUS (1994) from Colombia; RIOS (1994) from Brasil;

REDFERN (2001) from Abaco (Bahamas) with a good representation of the protoconch; LEE (2009) from Northeast

Florida. Cuba is the type locality and also we have material from Nicaragua.

Remarks: Examining the material from ZMB we found one lot (ZMB, 2334) with only one shell of 5.8 mm from Cuba, which is labelled as *R. cancellata* Philippi (coll. Pfeiffer), in good condition, with multi-spiral protoconch, with a spiral cordlet on the last whorl. We have no doubt that this shell is the holotype of *R. cancellata* because the locality and collector coincide with the indications given by PHILIPPI (1847) in the original description. It seems to be the same species that we usually call *R. sagraiana* with the characters previously mentioned in the description.

Rissoina sagraiana appears in the literature as the oldest species name for this morphologically similar group, despite the indication by DESJARDIN (1949) listing the name *Rissoina sagraiana* d'Orbigny, as from 1853. The species was first published by D'ORBIGNY (1842) under the name *Rissoina sagra* in the caption of the plate and

thereby made available under the provisions of article 12.2.7 of the International Code of Zoological Nomenclature; the complete description was published years later (1846) under the name *R. sagraiana* and the publication in parts was completed only in 1853 (dates as stated in BOUCHET AND ROCROI, 2005). Therefore there are two different spellings of the name, but according to article 32.5.1.1 of the ICZN, correction of the spelling of a name in a later part of a work published in parts constitutes an evidence for an inadvertent error and therefore, the species must be cited as *Rissoina sagraiana* d'Orbigny, 1842 having priority over *Rissoina cancellata* Philippi, 1847.

This species is figured under the name *R. cancellata* by PONDER (1985: 83, fig. 135) who considered it as a synonym of *R. pulchra* C. B. Adams, 1850, the type species of subgenus *Phosinella* Mörch, 1876. The protoconch shown therein is typical of *Rissoina sagraiana*.

Rissoina pulchra (C. B. Adams, 1850) (Figs. 2A-E)

Rissoa pulchra C. B. Adams, 1850. *Cont. Conch.*, 7: 114.

Type material: Lectotype (Fig. 2A) in MCZ (156423)(C. B. Adams coll., Acc. 1173), designated by CLENCH AND TURNER (1950) by inference of a holotype.

Other material examined: Cuba: 1 s, Faro Luna, Cienfuegos 40 m (CFG); 1 s, Rancho Luna, 20 m (MHNS); 1 s, Faro de los Colorados, 35 m (MHNS); 1 s, Rancho Club, 10 m (all in Cienfuegos Bay); 1 j, Maria la Gorda, 30 m (MHNS).

Description: See original description (ADAMS, 1850 and CLENCH AND TURNER, 1950). The shell (Figs. 3A-B) seems to be very similar to that of *R. cancellata* even in the protoconch, which is smaller (Fig. 3C), also multispiral, with about 2 1/2 whorls and a diameter of 270 μ m. Under magnification it seems that this protoconch lacks any spiral sculpture.

Dimensions: the lectotype is 5.7 mm. Shells from Cuba may be a little larger (up to 7.0 mm).

Distribution: From Abaco (Bahamas) by REDFERN (2001) showing a protoconch. "Jamaica" in the original description (type locality).

Remarks: This is the type species of the subgenus *Phosinella* Mörch, 1876 (SD

Nevill, 1885). PONDER (1985) considered *R. pulchra* C. B. Adams, 1850 as a synonym of *R. cancellata* and used the latter name because *Rissoa pulchra* is a primary homonym of *Rissoa pulchra* Forbes, 1844, described from the Aegean Sea. As already mentioned the shell figured in PONDER (1985) and presumably also the specimens used for anatomy are *R. sagraiana* = *cancellata* rather than *R. pulchra*. The taxon *Rissoa pulchra* Forbes, 1844 has never been mentioned since its description, and it is uncertain to which species it refers. Conversely, *R. pulchra* Adams, 1850 has been recorded sometimes during the last 50 years: NOWELL-USTICKE (1959), ABBOTT (1974), DIAZ MERLANO AND PUYANA HEGEDUS (1984), PONDER (1985), DE JONG

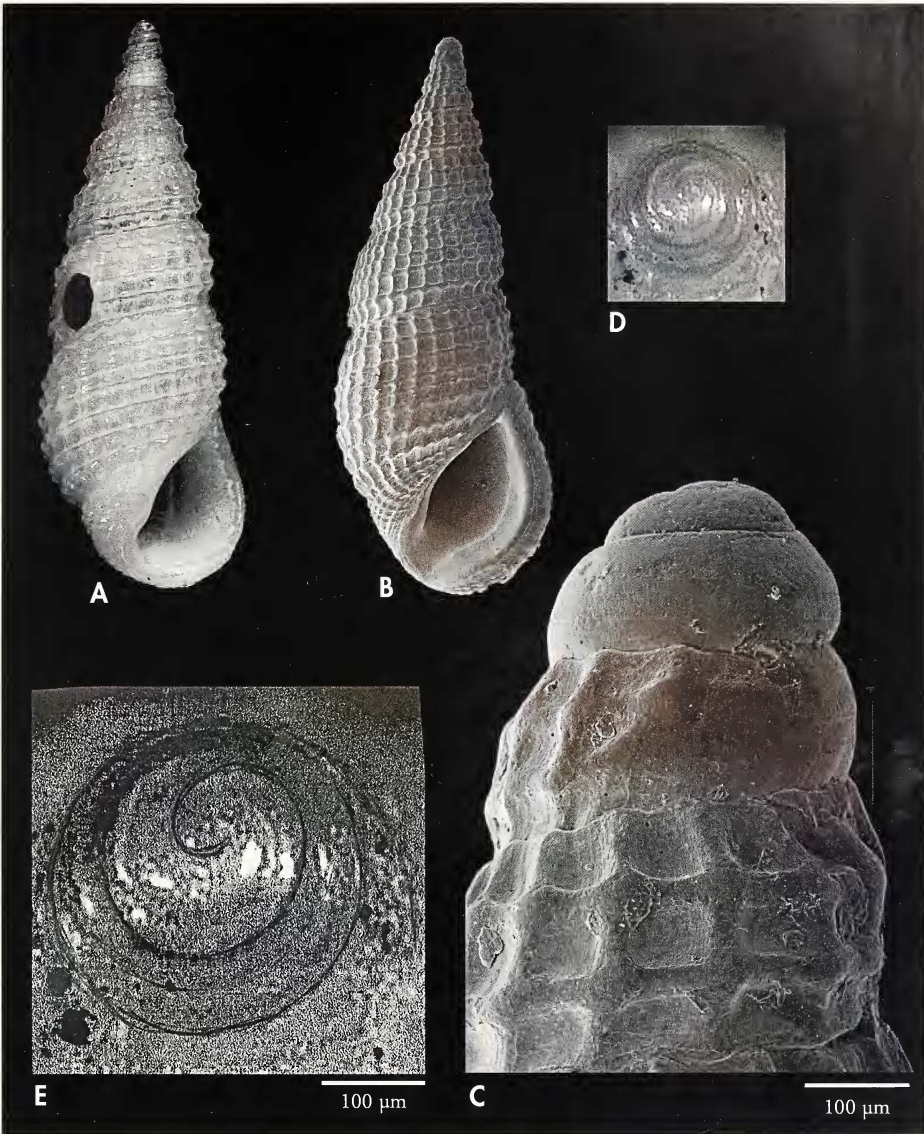


Figure 2. *Rissoina pulchra* (C. B. Adams, 1850). A: Lectotype, 5.7 mm, MCZ (156423). B: shell, 5.6 mm, Cuba (MHNS); C: protoconch, same shell as B; D-E: protoconch of the lectotype.

Figura 2. *Rissoina pulchra* (C. B. Adams, 1850). A: Lectotipo, 5,7 mm, MCZ (156423). B: concha, 5,6 mm, Cuba (MHNS); C: protoconcha, misma concha que B; D-E: protoconcha del lectotipo.

AND COOMANS (1988), RIOS (1994), REDFERN (2001). Although this is probably short of the 25 publications required to make it a *nomen protectum* under the provisions of ICZN, we also consider current usage in leading databases such

as Malacolog <<http://www.malacolog.org/>>, the World Register of Marine species <www.marinespecies.org> and the Encyclopedia of Life <www.eol.org>. For these reasons we propose to keep using the name *R. pulchra* C. B. Adams.

Table I. Schematic comparison of the shells of the *Rissoina sagraiana* group.
 Tabla I. Comparación de las conchas del grupo de *Rissoina sagraiana*.

species	protoconch whorls	µm diameter protoconch	spiral cord in protoconch	spiral cords at first teleoconch whorl
<i>sagraiana</i>	2 1/2 - 2 3/4	390-400	yes	2
<i>pulchra</i>	2 1/2	270	no	2
<i>cancellina</i>	2	320-330	yes	3
<i>labrosa</i>	2	400	yes	2 small, joint
<i>redferni</i>	1 1/4	380	no	3

CLENCH AND TURNER (1950) mentioned and figured the holotype of this taxon: as Adams (1850) did not designate a holotype, the previous mention may be considered as a lectotype designation.

REDFERN (2001) represented the three species *sagraiana-cancellata-pulchra* and described the protoconchs with the dif-

ference of their being keeled or not. According to him, *R. pulchra* differs from *R. sagraiana* and *R. cancellata* (actually, from the species described herein as *R. cancellina* spec. nov.) in having a wider protoconch without any spiral cord. We agree with this difference. The details of this comparison are given in Table I.

Rissoina cancellina spec. nov. (Figs. 3A-E)

Type material: Holotype (Fig. 3A) in MNCN (15.05/53590). Paratypes: ZMB (1, n° 115039) (Fig. 3B) labelled as *Rissoina cancellata* Phil. v. *pulchra* C. B. Adams, Jamaica, coll. Paetel; MNHN (1), MHNS (5), IES (1), CFG (10).

Other material examined: Cuba: 8 s, 3 j, Cayo Carenas, Cienfuegos Bay, 5-10 m (CFG); 10 s, Rancho Luna, 20-40 m (CFG); 11 s, 3 j, Faro de los Colorados, Cienfuegos, 15 m (CFG); 2 s, La Concha, Cienfuegos Bay, 3 m (CFG); 2 ej, Guajimico, Cienfuegos, 3 m (CFG); 10 s, 8 j, Rancho Luna, Cienfuegos, 10-55 m (MHNS); 3 s, Faro de los Colorados, Cienfuegos, 20 m (MHNS); 2 s, 3 j, Bajo de Sancho Pardo, 4 m (MHNS); 1 s, Cuba, ZMB (coll. Dunker, 115036). Saint Thomas: 2 s, ZMB (115038). West Indies: 7 s, ZMB (coll. Paetel, 115037). Nicaragua: 5 s, 5j, Cayo Miskitos, 25 m (MHNS).

Type locality: Cienfuegos, Cuba.

Etymology: From the Latin word *cancelli* "lattice gate" alluding to the crossed sculpture, and also due to the similarity with *Rissoina cancellata*, taxon which now is considered in synonymy of *R. sagraiana*.

Description: Shell (Figs. 3A-B) ovoid elongate, pointed, solid and whitish. Protoconch (Figs. 3C, 3D) almost cylindrical and a little depressed, with between 320-330 µm, and about 2 whorls, the first one smooth and the second with a spiral cord at the middle. The beginning of the teleoconch has immediately three spiral cords. The subsequent whorls also have 3-5 spiral cords crossed by axial ribs. These ribs are 10-13 in the first whorls and 16-19 on the last one. On the body whorl the cords are 9-10. On the subsutural area (Fig. 3E) there are about five very small spiral threads. Under high magnifica-

tion (Fig. 3F) numerous micro perforations can be seen on the surface of the shell. Aperture ovoid with a typical depression of the genus near the base.

The holotype is 9.3 mm. Other shells are slightly smaller.

Distribution: Probably this species has a large distribution in the Caribbean, but usually it has been recorded under different names, so that confirmation is needed in order to avoid possible confusion with other similar species. REDFERN (2001, as *R. cancellata*) figured the protoconch.

Remarks: The holotype is a shell in good condition and with a good proto-

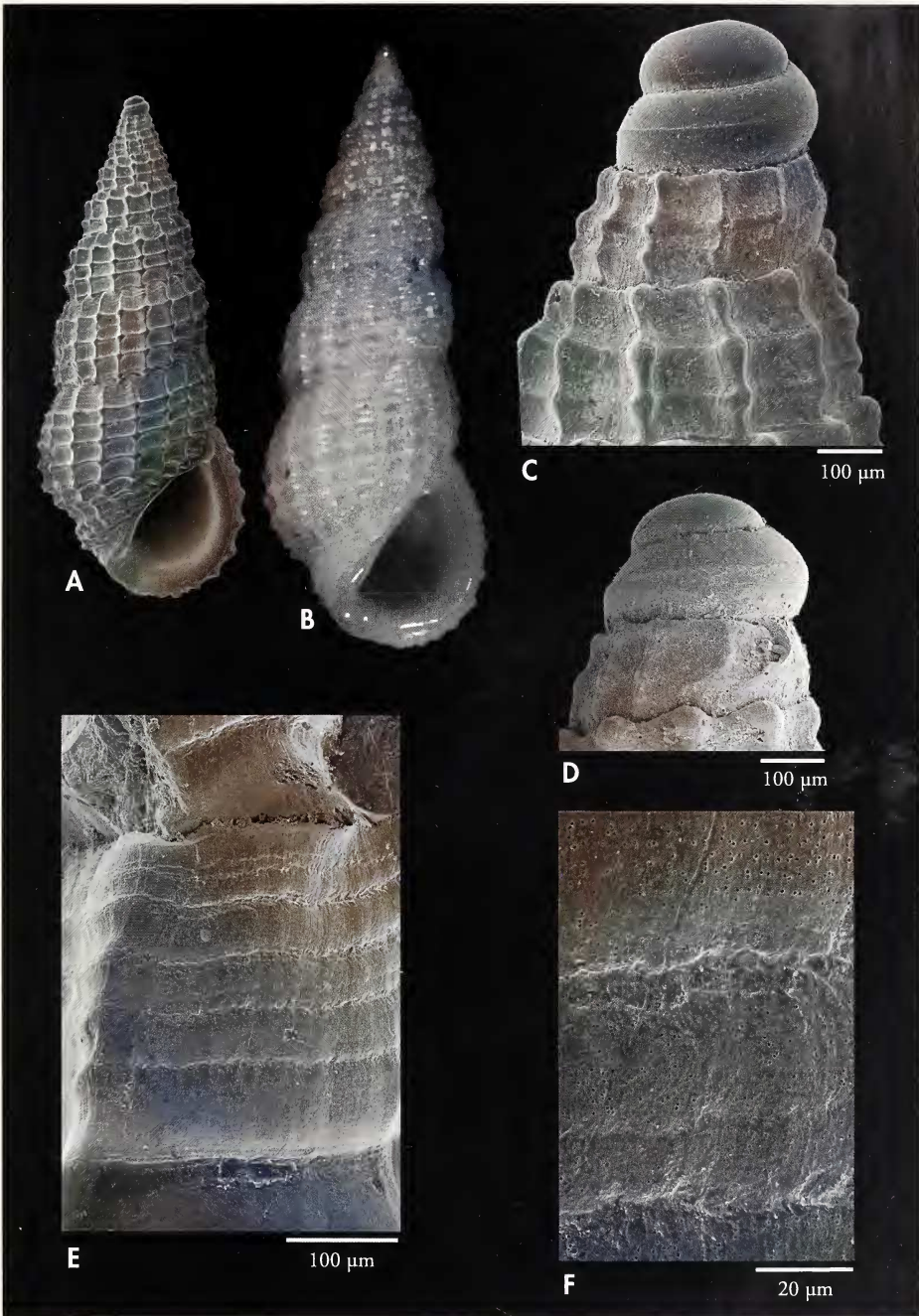


Figure 3. *Rissoina cancellina* spec. nov. A: holotype, 5.7 mm, Cuba (MNCN); B: paratype, 8.5 mm, ZMB (115039); C: protoconch of the holotype; D: protoconch, Cayo Miskitos, Nicaragua; E, F: microsculpture of the holotype.

Figura 3. *Rissoina cancellina* spec. nov. A: holotipo, 5,7 mm, Cuba (MNCN); B: paratipo, 8,5 mm, ZMB (115039); C: protoconcha del holotipo; D: protoconcha, Cayo Miskitos, Nicaragua; E, F: microescultura del holotipo.

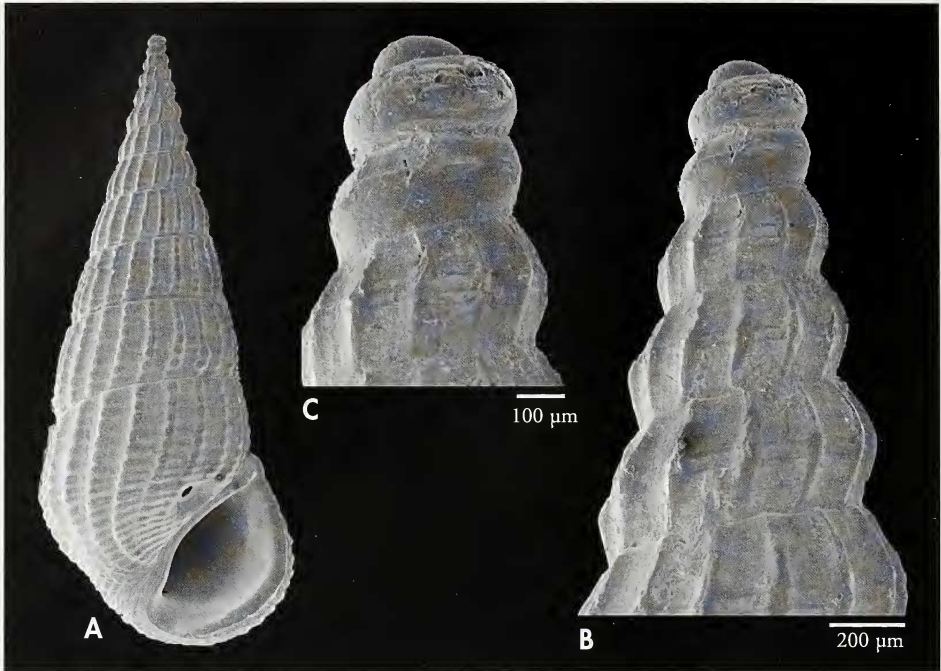


Figure 4. *Rissoina labrosa* Schwartz, 1860. A: Shell, 11.0 mm, Cienfuegos, Cuba; B, C: Protoconch.
 Figura 4. *Rissoina labrosa* Schwartz, 1860. A: Concha, 11,0 mm, Cienfuegos, Cuba; B, C: Protoconcha.

conch (Fig. 2A) measuring 9.3 mm (ZMB, 115039) and labelled as *Rissoina cancellata* Phil. v. *pulchra* C. B. Adams, Jamaica, coll. Paetel.

In the material in the ZMB, there are several shells which can belong to this species. One of them (ZMB, 115036) from Cuba, coll. Dunker, has a shell whose protoconch presents excrescences on its upper part and is hence difficult to observe. Six shells more in this lot have lost the protoconch and are badly eroded. Another lot (ZMB, 115037) includes a probable *R. cancellina* but eroded and without protoconch. One

more (ZMB, 115038) may also be the same species but is much eroded.

R. cancellina spec. nov. must be compared with the following:

R. sagraiana has a protoconch with more whorls ($2\frac{1}{2}$ - $2\frac{3}{4}$) and the first whorls of the teleoconch have only two spiral cords (see Table 1).

R. pulchra has a protoconch with more whorls, lacking any spiral cord, while in the beginning of the teleoconch there are only two cords on the first whorls.

R. redferni has a protoconch with less whorls ($1\frac{1}{2}$) but wider, and without any spiral cord.

Rissoina labrosa Schwartz, 1860 (Figs. 4A-B)

Rissoina labrosa Schwartz, 1860. Über... Die Gattung *Rissoina*, pl. 7, fig. 58.

Rissoina sheaferi Mc Ginty, 1962: 42, pl. 3, fig. 5.

Type material: Supposedly in the Vienna Museum. Not examined.

Material examined: Cuba: 1 s, Cayo Carenas, Cienfuegos Bay, 10 m (CFG); 1 s, Faro de los Colorados, Cienfuegos, intertidal (CFG); 3 j, Rancho Luna, Cienfuegos, 12 m (CFG); 1 s, Faro Luna, Cienfuegos,

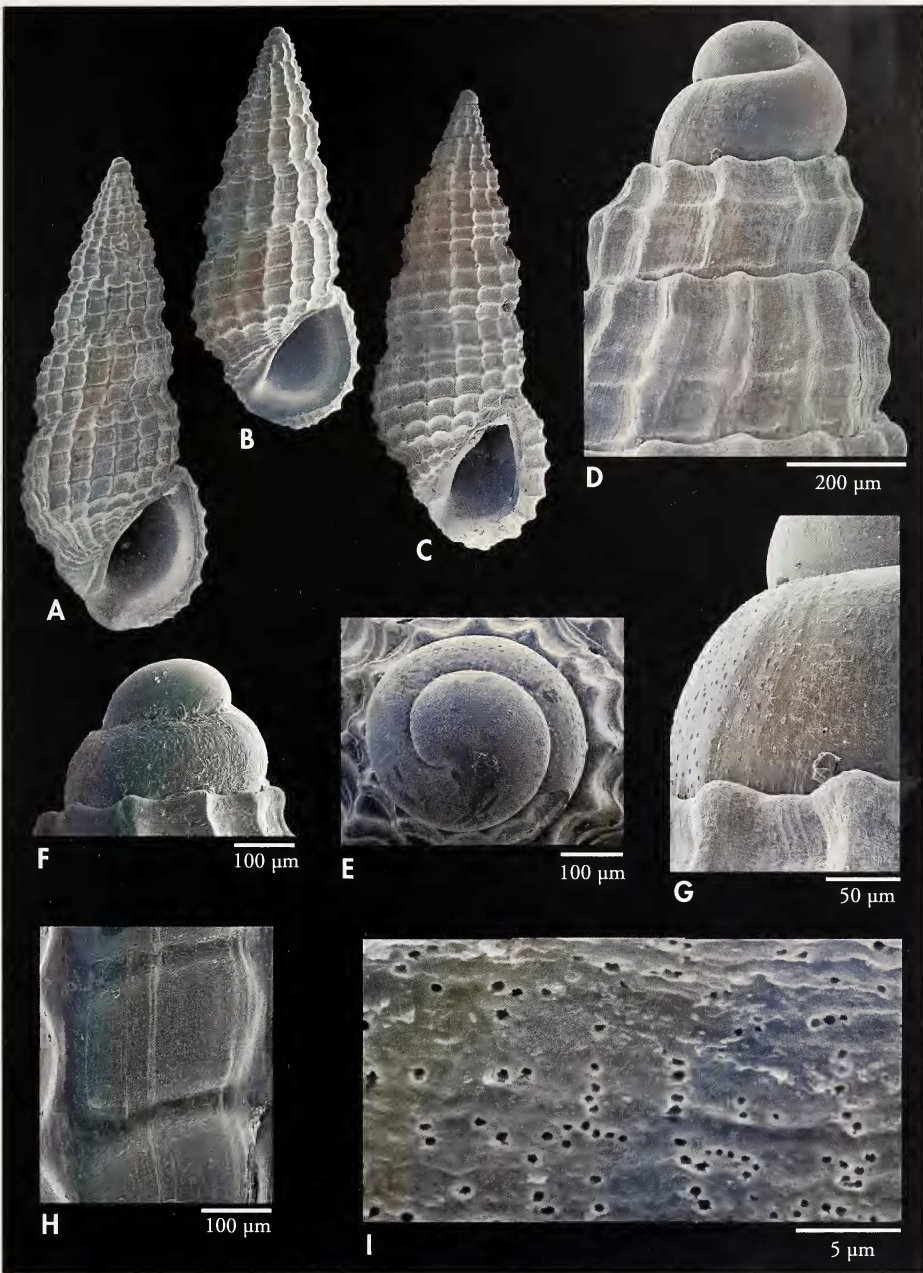


Figure 5. *Rissoina redferni* Espinosa and Ortea, 2002. A: shell, 6.4 mm, Egmond Key, Florida (CHL); B: shell, 4.8 mm, Cienfuegos, Cuba; C: shell, 5.8 mm, Cayo Miskitos, Nicaragua; D, E: protoconch, shell from Florida; F: protoconch, shell from Cuba; G: microsculpture of the protoconch, same shell as D; H, I: microsculpture of the teleoconch, shell from Florida.

Figura 5. *Rissoina redferni* Espinosa y Ortea, 2002. A: concha, 6,4 mm, Egmond Key, Florida (CHL); B: concha, 4,8 mm, Cienfuegos, Cuba; C: concha, 5,8 mm, Cayo Miskitos, Nicaragua; D, E: protoconcha, concha de Florida; F: protoconcha, concha de Cuba; G: microescultura de la protoconcha, misma concha que D; H, I: microescultura de la teleoconcha, concha de Florida.

20 m (MHNS); 2 s, Rancho Luna, Cienfuegos, 22-54 m (MHNS); 1 s, Cable Inglés, Cienfuegos, 20 m (CFG); 5 s, 6 j, Bajo de Sancho Pardo, 3-5 m (MHNS); 2 s, 5 j, María la Gorda, 30 m (MHNS). Mexico: 4 s, Puerto Morelos, Quintana Roo, Yucatán (MHNS). Nicaragua: 3 s, Cayo Los Muertos, 15 m (MHNS).

Description: See SCHWARTZ (1860). The protoconch has a little more than 2 whorls and has a cylindrical profile.

Distribution: Known from Cuba (type locality), Curaçao, Aruba and Bonaire (DE JONG AND COOMANS, 1988). Nicaragua and Mexico, in the present work.

Remarks: This shell may be considered somewhat different from the others included in the group, and was previously mentioned as being larger and more pointed, with a straight profile, with the suture scarcely marked, and the protoconch cylindrical and elevated. We figure a shell (Fig. 4A) and protoconch (Figs. 4B-C) for comparison.

Rissoina redferni Espinosa and Ortea, 2002 (Figs. 5A-H)

Rissoina redferni Espinosa and Ortea, 2002. *Avicemia*, 15: 142.

Type material: Holotype (IGH) not examined.

Other material examined: Cuba: 25 shells, Cienfuegos Bay, 35 m (MHNS); 3 s, Punta Tamarindo, Cienfuegos, 20 m (MHNS); 5 s, de Sagua la Grande, Villa Clara, 3-10 m (CFG); 4 s, Batabanó, Habana, 5-7 m (CFG). Florida: 4 s, Egmond Key (CHL). Nicaragua: 3 s, Cayo Miskitos, 6 m (MHNS); 7 s, Cayo Los Muertos, 12 m (MHNS); 5 s, Cayo Witties, 20 m (MHNS).

Description: Shell (Figs. 5A-C): see ESPINOSA AND ORTEA (2002). This description is short in some aspects referring to micro sculpture: the protoconch (Figs. 5D-F) has $1\frac{1}{4}$ whorls which have small tubercles spirally aligned, more evident near the end (Fig. 5G). The nucleus has about 160 μm ; the first half whorl measures about 270 μm , and the protoconch about 380 μm . The micro sculpture of the teleoconch (Figs. 5H-I) presents spiral lines formed by a rough surface and under very high magnification shows small pits. The comparison of the material from Cuba and from the Bahamas did not show meaningful differences.

Distribution: Known from Bahamas (REDFERN, 2001), Nicaragua and Cuba

(type locality: Playa Flamenco, Cayo Coco).

Remarks: We consider *R. redferni* a valid species, different from all similar species previously mentioned. In the original description comparison with *R. pulchra* had not been made; this latter has a more reticulated shell, with more numerous spiral ribs, the protoconch being larger and with more whorls; *R. cancellina* spec. nov. has a similar shell, but its protoconch is larger and has $2\frac{1}{4}$ whorls instead of $1\frac{1}{4}$. *R. sagraiana* has a protoconch with $2\frac{1}{2}$ - $2\frac{3}{4}$ whorls. On the other hand, comparison with *R. fenestrata* is not necessary, as the shells and protoconchs are rather different (see ROLÁN AND FERNÁNDEZ-GARCÉS, 2009b).

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